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Opinion: It's time to clean the germs out of our indoor air

Blake Murdoch

Published Apr 04, 2024 • 3 minute read

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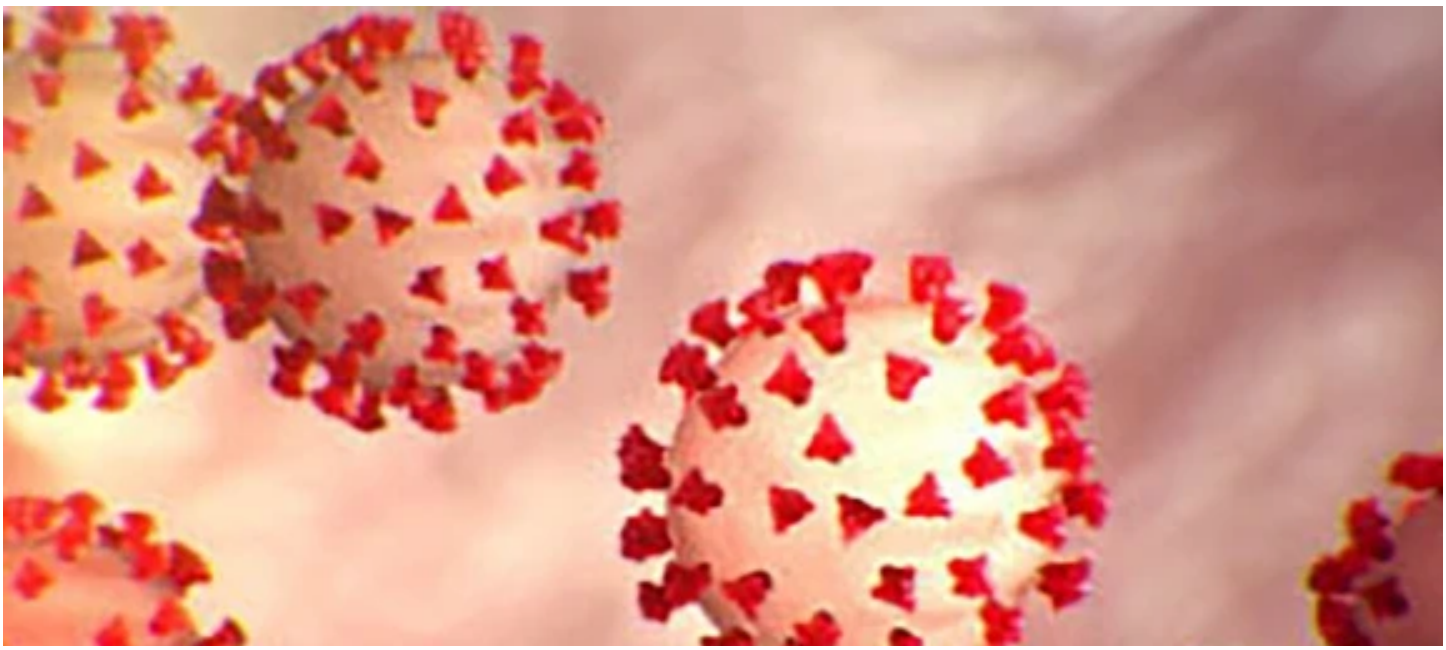

This handout file illustration image obtained Feb. 27, 2020 courtesy of the Centers for Disease Control and Prevention and created at the Centers for Disease Control and Prevention (CDC) shows the coronavirus, COVID-19. PHOTO BY SUPPLIED / Centers for Disease Control and

On Feb. 11, 2020, World Health Organization Director-General Dr. Tedros Adhanom Ghebreyesus openly stated that the new coronavirus was airborne. His colleague Dr. Michael Ryan then whispered to him and showed him a note. A few minutes later, Dr. Tedros retracted his statement, calling the term airborne “military language” and saying the virus spreads by “droplets.”

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Some countries, like Japan, recognized the novel coronavirus seemed to stay suspended in the air like smoke. Yet, the WHO and much of the world did not. On March 28, 2020, the WHO infamously tweeted "Fact Check: COVID-19 is NOT airborne."

It was later reported that aerosol physicists were essentially ignored in favour of medical dogma when attempting to advise the WHO at the start of the pandemic. Many lives would have been saved had public health institutions focused on mitigating airborne transmission.

Over four years later, things are changing. The WHO now finally and fully recognizes COVID-19 is airborne at the institutional level, and has made one of the world's top aerosol scientists co-chair of their new indoor air advisory group. The WHO also collaborated with particle physicists to develop ARIA, the Airborne Risk Indoor Assessment tool, which models risk of infection for different types of buildings and settings to help us understand how to make indoor air clean.

This key tool can be world-changing if used properly, and I'll explain why.

Firstly, cleaning indoor air mitigates all airborne diseases at the same time without requiring changes to individual behaviour. Several diseases that cause us repeated suffering and fill our hospitals are airborne, including COVID-19, influenza, RSV, and tuberculosis.

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Secondly, cleaning indoor air will help prevent future pandemics. Viruses that cause a global emergency are quite likely to be airborne, because those kinds of pathogens typically spread more easily. After all, the average person breathes around 11,000 litres of air per day. Plus, many countries already have clean water, essentially eliminating waterborne pandemics. We no longer get cholera, and we no longer have to get influenza either.

Thirdly, when clean indoor air reduces the spread of disease, then fewer people in any given indoor space are contagious than before, further reducing transmission. This creates a beneficial feedback loop. The gains in disease prevention compound to much greater benefits, like money you invest over decades. But because the lifecycle from infection to transmission is short, the compounding benefits happen much faster — they can begin within weeks.

This can result in “exponential decay.” When each infected person infects less than one other person on average, a disease starts to organically disappear, becoming more and more rare.

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Exponential decay can even lead to eradication. This has happened recently. Public health measures during the first few years of the pandemic led to the extinction of the entire Yamagata B lineage of the influenza family tree. Now it’s being removed from all future flu

vaccine formulations.

With investments in indoor air quality we can control every airborne disease. Imagine telling parents with school-aged children who are constantly sick that just changing the building code will make their kids far healthier. This is obviously what they want, and it will also prevent post-viral chronic illnesses like long COVID. I'm not sure parents understand this is currently possible. As a result, unnecessary disease is socially normalized as a rite of passage to help families cope. But life can be much better than that.

Ventilation, filtration and germicidal lighting such as Far-UV and upper-room UV are the three main existing technologies that can make our buildings healthy. We should be spending millions, even billions, on this endeavour. It will be the largest improvement in human hygiene since the advent of water treatment. It will reap huge economic benefits by greatly reducing short- and long-term illness, and will depressurize hospitals. Clean indoor air will also protect against harmful pollution and helps us adapt to climate change, as those who have breathed wildfire smoke know well.

Now we just need bureaucracy to take a back seat to scientists and engineers so they can get on with making life better for everyone.

Blake Murdoch is a science communicator and senior research associate with the Health Law Institute at the University of Alberta.

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